

Hot-Fire Testing of 5N and 22N HPGP Thrusters

This hot-fire test continues NASA investigation of green propellant technologies for future missions. To show the potential for green propellants to replace some hydrazine systems in future spacecraft, NASA Marshall Space Flight Center (MSFC) is continuing to embark on hot-fire test campaigns with various green propellant blends.

NASA completed hot-fire testing of 5N and 22N HPGP thrusters at the Marshall Space Flight Center's Component Development Area altitude test stand in April 2015. Both thrusters are ground test articles and not flight ready units, but are representative of potential flight hardware with a known path towards flight application. The purpose of the 5N testing was to perform facility check-outs and generate a small set of data for comparison to ECAPS and Orbital ATK data sets. The 5N thruster performed as expected with thrust and propellant flowrate data generated that are similar to previous testing at Orbital ATK. Immediately following the 5N testing, and using the same facility, the 22N testing was conducted on the same test stand with the purpose of demonstrating the 22N performance. The results of 22N testing indicate it performed as expected.

The results of the hot-fire testing are presented in this paper and presentation.